In the Claims

Kindly amend claims 1 and 14 as shown in the following claim listing:

1.(currently amended) A DC-DC converter comprising:

an inductor coupled for receiving a DC-input voltage and for supplying an output voltage,

a switch for periodically connecting the inductor to the DC-input voltage during an on-period of a period time, and for directly connecting the inductor to ground, an operating frequency of the DC-DC converter being the inverse of the period time, and

a controller for controlling the operating frequency to be substantially proportional to the output voltage to obtain a substantially constant average duration of the on-period as function of the output voltage.

2.(original) A DC-DC converter as claimed in claim 1, wherein the controller comprises:

a drive circuit for supplying a drive signal to the switch to control on- and off-states of the switch,

a controllable oscillator for supplying a control signal to the drive circuit, and

an output voltage measurement circuit for supplying an oscillator control signal for controlling the controllable oscillator to adapt its operating frequency to be substantially proportional to the output voltage while keeping the average duration of the on-period of the switch substantially constant.

3.(original) A DC-DC converter as claimed in claim 1, wherein the operating frequency is substantially directly proportional to the output voltage.

4.(original) A DC-DC converter as claimed in claim 1, wherein the operating frequency is further dependent on the DC-input voltage to obtain the substantially constant average duration of the on-period as function of the DC-input voltage, also.

5.(original) A DC-DC converter as claimed in claim 4, wherein the operating frequency is substantially directly inverse proportional to the DC-input voltage.

6.(original) A DC-DC converter as claimed in claim 5, wherein the operating frequency fo is fo = (N x Vo) / (Ton x Vi), wherein N is a constant, Vo is the output voltage, Ton is the substantially constant average duration of the on-period, and Vi is the DC-input voltage.

7.(original) A DC-DC converter as claimed in claim 1, wherein the controller comprises a comparator for comparing an actual duration of the on-period of the switch with a desired duration of the on-period to control the operating frequency to obtain the substantially constant average duration of the on-period.

8.(original) A DC-DC converter as claimed in claim 7, wherein the controller further comprises:

a loop filter for filtering a difference signal supplied by the comparator to obtain a filtered difference signal,

a controllable oscillator for receiving the DC-input voltage, the output voltage, and the filtered difference signal to supply an oscillator signal having the operating frequency and the substantially constant average duration of the on-period, and

a drive circuit for receiving the oscillator signal to drive the switch.

9.(original) A DC-DC converter as claimed in claim 7, wherein the controller further comprises:

an input voltage measurement circuit for measuring a value of the DC-input voltage,

an output voltage measurement circuit for measuring a value of the output voltage,

a loop filter for filtering a difference signal supplied by the comparator to obtain an filtered difference signal,

a controllable oscillator for receiving the value of the DC-input voltage, the value of the output voltage, and the filtered difference signal to supply an oscillator signal having the operating frequency and the substantially constant average duration of the on-period, and

a drive circuit for receiving the oscillator signal to drive the switch.

10.(original) A DC-DC converter as claimed in claim 7, wherein the operating frequency fo is fo = (N x Vo) / (Ton x Vi), wherein Vo is the output voltage, Ton is the substantially constant average duration of the on-period, Vi is the DC-input voltage, and wherein N depends on the filtered difference signal.

11.(original) A DC-DC converter as claimed in claim 1, wherein a series arrangement of main current paths of the first mentioned switch and a further switch is arranged for receiving the DC-input voltage, the inductor being arranged between a smoothing capacitor and a junction of the main current paths of the first mentioned switch and the further switch, the output

voltage being present across the smoothing capacitor, the control circuit being adapted to further control the further switch in substantially the opposite phase than the first mentioned switch.

12.(original) A controller for use in the DC-DC converter as claimed in any one of the preceding claims.

13.(original) An apparatus comprising a DC-DC converter as claimed in any one of the claims 1 to 11.

14.(currently amended) A method of controlling a DC-DC converter comprising:

an inductor coupled for receiving a DC-input voltage and for supplying an output voltage,

a switch for periodically connecting the inductor to the DC-input voltage during an on-period of a period time, and for directly connecting the inductor to ground, an operating frequency of the DC-DC converter being the inverse of the period time,

the method comprising the step of controlling the operating frequency to be substantially proportional to the output voltage to obtain a substantially constant average duration of the on-period as function of the output voltage.